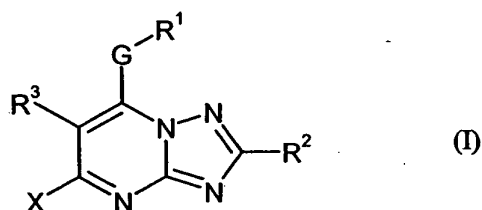


Claims

1. Triazolopyrimidines of the formula



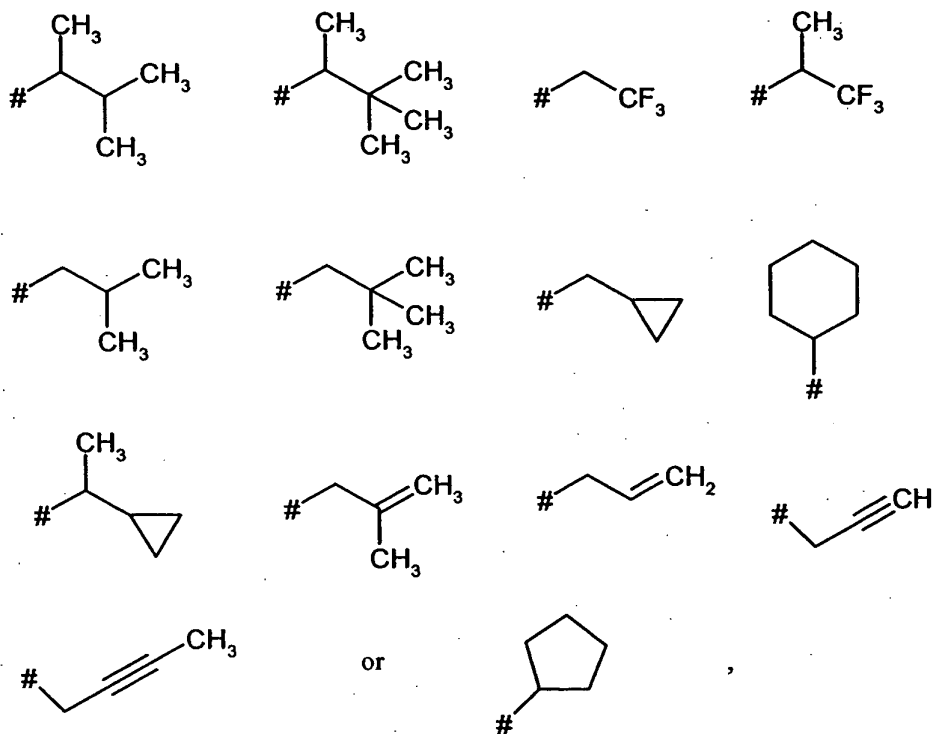
in which

- 5 R^1 represents optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl or optionally substituted heterocyclyl ,
- R^2 represents a hydrogen, halogen, optionally substituted alkyl or optionally substituted cycloalkyl ,
- R^3 represents optionally substituted heterocyclyl
- 10 G represents oxygen or SO_n , wherein
- n is 0, 1 or 2,
- and
- 15 X represents halogen, cyano, optionally substituted alkyl, optionally substituted alkoxy, optionally substituted alkylthio, optionally substituted alkylsulphinyl or optionally substituted alkylsulphonyl .

2. The triazolopyrimidines of the formula (I) according to claim 1, in which

- R^1 represents alkyl with 1 to 6 carbon atoms which can be identically or differently substituted between one and five times, by halogen, cyano, hydroxy, alkoxy with 1 to 4 carbon atoms and/or cycloalkyl with 3 to 6 carbon atoms, or
- 20 R^1 represents alkenyl with 2 to 6 carbon atoms which can be identically or differently substituted between one and three times, by halogen, cyano, hydroxy, alkoxy with 1 to 4 carbon atoms and/or cycloalkyl with 3 to 6 carbon atoms, or

- R¹ represents alkynyl with 3 to 6 carbon atoms which can be identically or differently substituted between one and three times, by halogen, cyano, hydroxy, alkoxy with 1 to 4 carbon atoms and/or cycloalkyl with 3 to 6 carbon atoms, or
- 5 R¹ represents cycloalkyl with 1 to 6 carbon atoms which can be identically or differently substituted between one and three times, by halogen and/or alkyl with 1 to 4 carbon atoms, or
- R¹ represents saturated or unsaturated heterocyclyl with 5 or 6 ring members and 1 to 3 heteroatoms such as nitrogen, oxygen and/or sulphur, wherein the heterocyclyl can be substituted once or twice by halogen, alkyl with 1 to 4 carbon atoms, cyano and/or cycloalkyl with 3 to 6 carbon atoms,
- 10 R² represents hydrogen, fluorine, chlorine, bromine, iodine, alkyl with 1 to 4 carbon atoms, haloalkyl with 1 to 4 carbon atoms and 1 to 9 halogen atoms or cycloalkyl with 3 to 6 carbon atoms,
- R³ represents saturated or unsaturated heterocyclyl with 5 or 6 ring members and 1 to 4 heteroatoms such as nitrogen, oxygen and/or sulphur, wherein the heterocyclyl can be identically or differently substituted between one and four times by
- 15 fluorine, chlorine, bromine, cyano, nitro, alkyl, alkoxy, hydroximinoalkyl or alkoximinoalkyl with respectively 1 to 3 carbon atoms per part alkyl ,
- haloalkyl or haloalkoxy with respectively 1 to 3 carbon atoms and 1 to 7 halogen atoms
- G represents oxygen or SO_n, wherein
- 20 n is 0, 1 or 2,
- and
- X represents fluorine, chlorine, bromine, cyano, alkyl with 1 to 4 carbon atoms, alkoxy with 1 to 4 carbon atoms, alkyl sulphinyl with 1 to 4 carbon atoms or alkyl sulphonyl with 1 to 4 carbon atoms.
- 25 3. The triazolopyrimidines of formula (I) according to claim 1 or claim 2, in which
- R¹ represents a residue of the formula



where # marks the linking point,

- 5 R^2 represents hydrogen, fluorine, chlorine, bromine, iodine, methyl, ethyl, isopropyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, trifluoromethyl, 1-trifluoromethyl-2,2,2-trifluoroethyl or heptafluoroisopropyl,
- 10 R^3 represents pyridyl which is linked in the 2- or 4-position and can be identically or differently substituted between one and four times by fluorine, chlorine, bromine, cyano, nitro, methyl, ethyl, methoxy, methylthio, hydroximinomethyl, hydroximinoethyl, methoximinomethyl, methoximinoethyl and/or trifluoromethyl, or
- 15 R^3 represents pyrimidyl which is linked in the 2- or 4-position and can be identically or differently substituted between one and three times by fluorine, chlorine, bromine, cyano, nitro, methyl, ethyl, methoxy, methylthio, hydroximinomethyl, hydroximinoethyl, methoximinomethyl, methoximinoethyl and/or trifluoromethyl, or
- R^3 represents thienyl which is linked in the 2- or 3-position and can be identically or differently substituted between one and three times by fluorine, chlorine, bromine, cyano, nitro, methyl, ethyl, methoxy, methylthio, hydroximinomethyl, hydroximinoethyl, methoximinomethyl, methoximinoethyl and/or trifluoromethyl, or

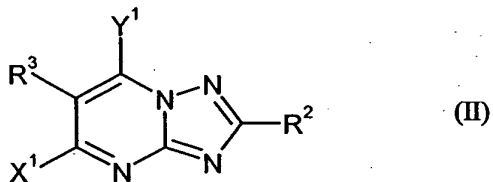
R^3 represents thiazolyl which is linked in the 2-, 4- or 5-position and can be identically or differently substituted once or twice by fluorine, chlorine, bromine, cyano, nitro, methyl, ethyl, methoxy, methylthio, hydroximinomethyl, hydroximinoethyl, methoximinomethyl, methoximinoethyl and/or trifluoromethyl,

5 G represents oxygen or sulphur and

X represents fluorine, chlorine, bromine, cyano, methyl, methoxy or methylthio.

4. A method for producing triazolopyrimidines of formula (I) according to one or more of claims 1 to 3, characterised in that

(a) dihalogentriazolopyrimidines of the formula



10

in which

R^2 and R^3 have the meanings given in claim 1,

X^1 represents halogen and

Y^1 represents halogen,

15 are reacted with compounds of the formula

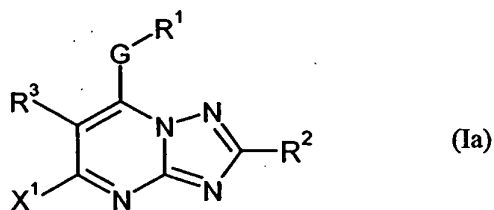


in which

R^1 and G have the meanings specified in claim 1,

20

optionally in the presence of a diluent, optionally in the presence of an acid acceptor and optionally in the presence of a catalyst and optionally the triazolopyrimidines thus obtained of the formula



in which

R^1 , R^2 , R^3 , G and X^1 have the meanings specified above,

are either reacted

5 α) with compounds of the formula



in which

10 R^4 represent optionally substituted alkoxy, optionally substituted alkylthio, optionally substituted alkylsulphinyl, optionally substituted alkylsulphonyl or cyano and

Me represents sodium or potassium,

optionally in the presence of a catalyst,

or

15 β) with Grignard compounds of the formula



in which

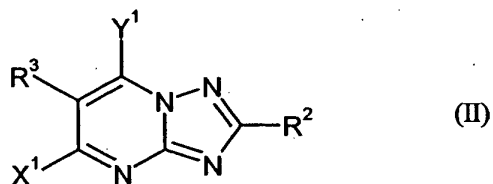
R^5 represents optionally substituted alkyl and

Hal represents chlorine or bromine,

in the presence of a diluent.

20 5. Means for combating undesirable micro-organisms, characterised in that it contains of at least one triazolopyrimidine of formula (I) according to one or more of claims 1 to 3 in addition to extenders and/or surfactants.

6. The use of triazolopyrimidines of formula (I) according to one or more of claims 1 to 3 for combating undesirable micro-organisms.
7. A method for combating undesirable micro-organisms, characterised in that triazolopyrimidines of formula (I) according to one or more of claims 1 to 3 are applied to the undesirable micro-organisms and/or their habitat.
8. A method for producing means for combating undesirable micro-organisms, characterised in that triazolopyrimidines of formula (I) according to one or more of claims 1 to 3 are mixed with extenders and/or surfactants.
9. Dihalogen-triazolopyrimidines of the formula



in which

R² represents hydrogen, halogen, optionally substituted alkyl or optionally substituted cycloalkyl,

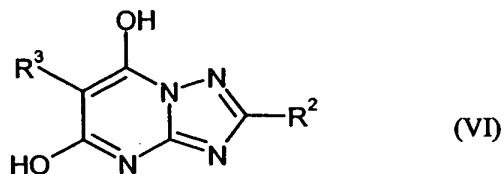
R³ represents optionally substituted heterocyclyl,

X¹ represents halogen and

Y¹ represents halogen.

10. A method for producing dihalogen-triazolopyrimidines of formula (II) according to claim 9, characterised in that

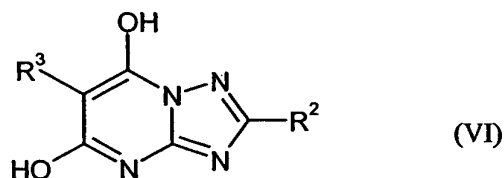
(b) dihydroxy-triazolo-pyrimidines of the formula



in which

R^2 and R^3 have the meanings given in claim 9,
are reacted with halogenating agents, optionally in the presence of a diluent.

11. Dihydroxy-triazolo-pyrimidines of the formula



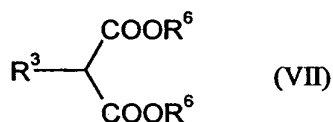
5 in which

R^2 represents hydrogen, halogen, optionally substituted alkyl or optionally substituted cycloalkyl and

R^3 represents optionally substituted heterocyclyl.

12. A process for preparing dihydroxy-triazolo-pyrimidines of formula (VI) according to claim
10 11, characterised in that

(c) heterocyclyl malonic esters of the formula

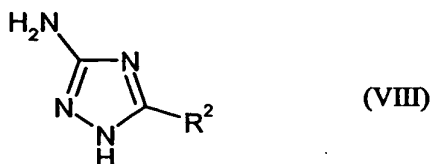


in which

R^3 has the meaning specified in claim 11 and

15 R^6 represents alkyl with 1 to 4 carbon atoms,

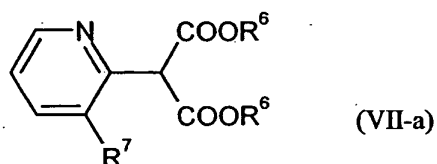
are reacted with aminotriazoles of the formula



in which

R^2 has the meaning given in claim 11,
optionally in the presence of a diluent and optionally in the presence of an acid binder.

13. A pyridyl malonic ester of the formula



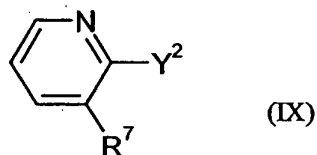
5 in which

R^6 represents alkyl with 1 to 4 carbon atoms and

R^7 represents halogen or haloalkyl.

14. A process for preparing pyridyl malonic esters of formula (VII-a) according to claim 13,
characterised in that

10 (d) pyridine halides of the formula

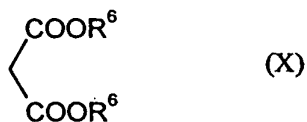


in which

R^7 has the meaning specified in claim 13 and

Y^2 represents halogen,

15 are reacted with malonic esters of the formula

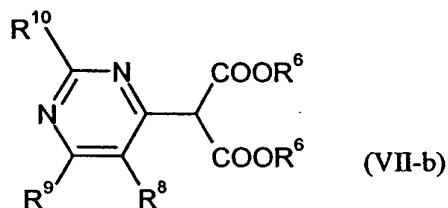


in which

R^6 has the meaning specified in claim 13,

optionally in the presence of a diluent, optionally in the presence of a copper salt and optionally in the presence of an acid acceptor.

15. A pyrimidyl malonic ester of the formula



- 5 in which

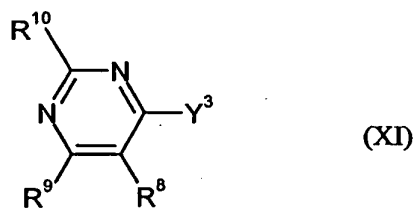
R^6 represents alkyl with 1 to 4 carbon atoms,

R^8 represents halogen or haloalkyl and

R^9 and R^{10} independently of one another represent hydrogen, fluorine, chlorine, bromine, methyl, ethyl or methoxy.

- 10 16. A process for preparing pyrimidyl malonic esters of formula (VII-b) according to claim 15, characterised in that

- (e) pyrimidine halides of the formula



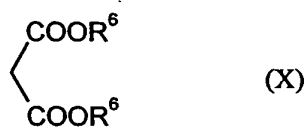
in which

- 15 R^8 , R^9 and R^{10} have the meanings specified in claim 15 and

Y^3 represents halogen,

are reacted with malonic esters of the formula

- 54 -



in which

R^6 has the meaning specified in claim 15,

optionally in the presence of a diluent, optionally in the presence of a copper salt and optionally in the presence of an acid acceptor.